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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/611,334	06/30/2003	John Heck	42P16325	3715
8791 7590 08/15/2007 BLAKELY SOKOLOFF TAYLOR & ZAFMAN 1279 OAKMEAD PARKWAY SUNNYVALE, CA 94085-4040			EXAMINER LEE, HSIEN MING	
			ART UNIT 2823	PAPER NUMBER
			MAIL DATE 08/15/2007	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/611,334

Applicant(s)

HECK ET AL.

Examiner

Hsien-ming Lee

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 07 June 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 5,6,8 and 13-19 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 13-19 is/are allowed.
- 6) ☒ Claim(s) 5,6 and 8 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 6/7/07 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

HSIEN-MING LEE
PRIMARY EXAMINER

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

8/13/07

DETAILED ACTION

Remarks

1. The indication of allowable subject matter with respect to claims 5-8 is withdrawn in view of newly discovered prior art.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 5-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nagarajan et al. (US 6,846,725).

In claim 5, Nagarajan et al., in Fig. 3G and corresponding text, teach a method of manufacturing a MEMS device, comprising:

- aligning a MEMS dice 372 formed on a first substrate 372 with a non-silicon cap 352 (note: the cap is non-silicon at least because the cap is metallized with a UBM layer, col. 5, lines 16-17) having at least one electrical via 362; and
- bonding the MEMS dice 372 with the non-silicon cap 352 to form a MEMS device 352/368/378/380/376/372, the MEMS device 352/368/378/380/376/372 having an interior and exterior, wherein the electrical via 362 extends from the interior to the exterior, wherein the bonding of the MEMS dice 372 with non-silicon cap 352 is achieved by a thermocompression bonding (col. 8, lines 18-20).

Nagarajan et al in the foregoing embodiment do not expressly teach *a plurality* of MEMS dice and *a plurality* of non-silicon cap. Nagarajan et al, however, in the background art suggested bonding two wafers (e.g. the foregoing the first substrate 372 and the non-silicon cap 352) in wafer-level MEMS packaging technologies before dicing the bonded wafers to obtain individual devices (col. 2, lines 22-24).

Therefore, it would have been obvious to one of the ordinary skill in the art, at the time the invention was made, to recognize that in the wafer-level MEMS packaging, before dicing bonded wafers, the wafers would include a plurality of MEMS dice and thus requires a plurality of corresponding caps for sealing each MEMS dice for this is a predictable to one of the ordinary skill in the art. In other word, it would have been obvious to one of the ordinary skill in the art to apply the teachings of Nagarajan et al into the wafer-level packaging so that a plurality of MEMS dice constitutes a wafer and a plurality of caps constitute another wafer, wherein each set of MEMS device includes a single MEMS dice 372 and a single non-silicon cap 352 taught in Nagarajan et al.. When the bonded wafers is singulated, each set of MEMS device would be like the configuration as illustrated in Fig. 3G in Nagarajan et al. Dicing the bonded wafers into a plurality of MEMS devices is a predictable results and the act is obvious to one of the ordinary skill in the art.

In claim 6, Nagarajan et al also suggested using gold (Au) in thermocompression bonding (col. 7, lines 24-26). Therefore, it would have been obvious to one of the ordinary skill in the art, at the time the invention was made to use a gold-to-gold thermocompression bonding technique to bond the plurality of MEMS deice and the plurality of non-silicon caps for the reasonable

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expectation of success, i.e. using the known thermocompression bonding technique to arrive the claimed invention.

In claim 8 is also rejected as the same reason as stated in claim 5, including the bonding being performed by eutectic bonding (col. 5, lines 12-13).

Allowable Subject Matter

4. Claims 13-19 are allowed.

5. The following is a statement of reasons for the indication of allowable subject matter:
see previous office action.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hsien-ming Lee whose telephone number is 571-272-1863. The examiner can normally be reached on Tuesday-Thursday (7:30 ~ 6:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew Smith can be reached on 571-272-1907. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Hsien-ming Lee
Primary Examiner
Art Unit 2823

August 13, 2007

HSIEN-MING LEE
PRIMARY EXAMINER

8/13/07

approved

Lee

8/13/07

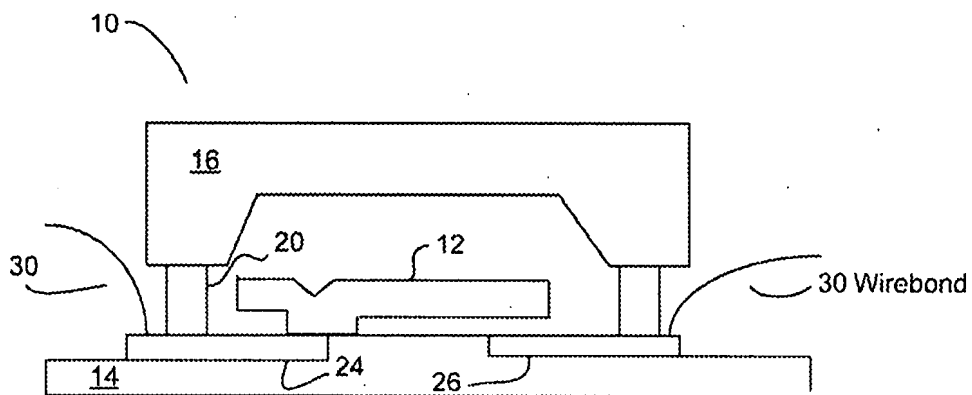


Fig. 1
(Prior Art)

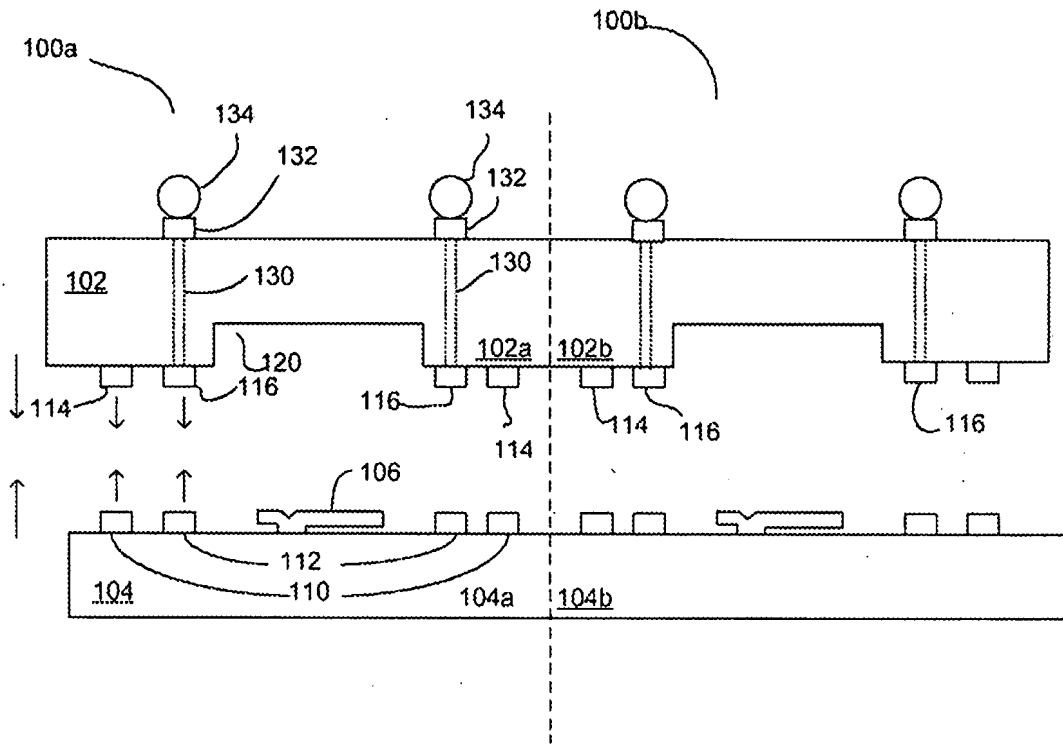


Fig. 2

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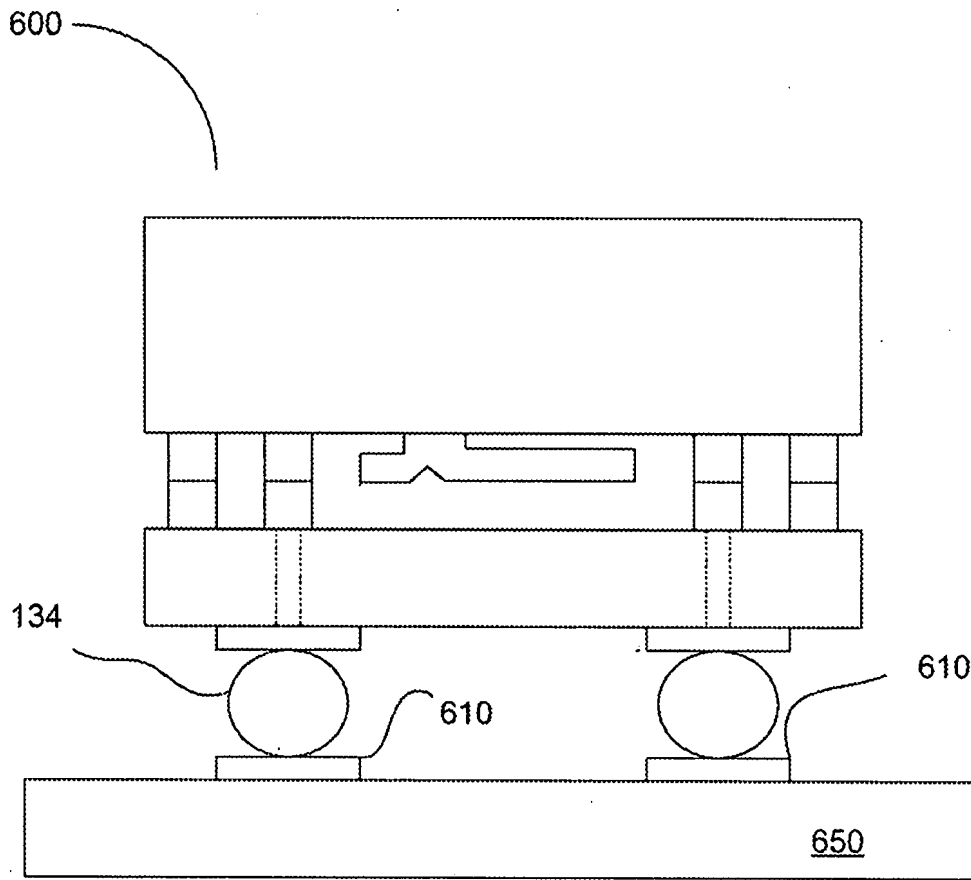


Fig. 6